

03/04/98

# NEW UTILITY PATENT APPLICATION TRANSMITTAL (Large Entity)

(Only for new nonprovisional applications under 37 CFR 1.53(b))

Docket No.  
1798-7267

Total Pages in this Submission

## TO THE ASSISTANT COMMISSIONER FOR PATENTS

Box Patent Application  
Washington, D.C. 20231

Transmitted herewith for filing under 35 U.S.C. 111(a) and 37 C.F.R. 1.53(b) is a new utility patent application for an invention entitled:

COMPOSITIONS FOR DRYING SOLID SURFACES

and invented by:

Pascal MICHAUD, 35 Boulevard Pasteur, 95210 Saint-Gratien, FRANCE

If a CONTINUATION APPLICATION, check appropriate box and supply the requisite information:

☐ Continuation    ☐ Divisional    ☐ Continuation-in-part (CIP) of prior application No.: \_\_\_\_\_

Enclosed are:

## Application Elements

1. ☒ Filing fee as calculated and transmitted as described below
2. ☒ Specification having 18 pages and including the following:
  - a. ☒ Descriptive Title of the Invention
  - b. ☐ Cross References to Related Applications (if applicable)
  - c. ☐ Statement Regarding Federally-sponsored Research/Development (if applicable)
  - d. ☐ Reference to Microfiche Appendix (if applicable)
  - e. ☒ Background of the Invention
  - f. ☒ Brief Summary of the Invention
  - g. ☐ Brief Description of the Drawings (if drawings filed)
  - h. ☒ Detailed Description
  - i. ☒ Claim(s) as Classified Below
  - j. ☒ Abstract of the Disclosure
3. ☐ Drawing(s) (when necessary as prescribed by 35 USC 113)
  - a. ☐ Formal
  - b. ☐ Informal

Number of Sheets \_\_\_\_\_

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## Application Elements (Continued)

4. ☒ Oath or Declaration
- a. ☐ Newly executed (*original or copy*)      ☒ Unexecuted
- b. ☐ Copy from a prior application (37 CFR 1.63(d)) (*for continuation/divisional application only*)
- c. ☒ With Power of Attorney      ☐ Without Power of Attorney
5. ☐ Incorporation By Reference (*usable if Box 4b is checked*)  
The entire disclosure of the prior application, from which a copy of the oath or declaration is supplied under Box 4b, is considered as being part of the disclosure of the accompanying application and is hereby incorporated by reference therein.
6. ☐ Computer Program in Microfiche (*Appendix*)
7. ☐ Nucleotide and/or Amino Acid Sequence Submission (*if applicable, all must be included*)
- a. ☐ Paper Copy
- b. ☐ Computer Readable Copy (*identical to computer copy*)
- c. ☐ Statement Verifying Identical Paper and Computer Readable Copy

## Accompanying Application Parts

8. ☐ Assignment Papers (*cover sheet & document(s)*)
9. ☐ 37 CFR 3.73(B) Statement (*when there is an assignee*)
10. ☐ English Translation Document (*if applicable*)
11. ☒ Information Disclosure Statement/PTO-1449      ☒ Copies of IDS Citations
12. ☒ Preliminary Amendment
13. ☒ Acknowledgment postcard
14. ☐ Certificate of Mailing
- ☐ First Class      ☐ Express Mail (*Specify Label No.*): \_\_\_\_\_
15. ☒ Certified Copy of Priority Document(s) (*if foreign priority is claimed*)

# NEW UTILITY PATENT APPLICATION TRANSMITTAL (Large Entity)

(Only for new nonprovisional applications under 37 CFR 1.53(b))

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## Accompanying Application Parts (Continued)

16. ☐ Additional Enclosures (please identify below):

jc542 U.S. PTO  
09/034415  
03/04/98

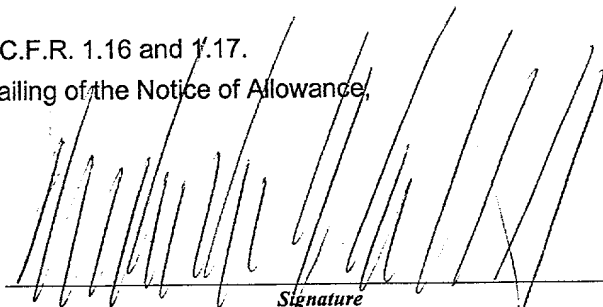
## Fee Calculation and Transmittal

### CLAIMS AS FILED

For	#Filed	#Allowed	#Extra	Rate	Fee
Total Claims	15	- 20 =	0	x \$22.00	\$0.00
Indep. Claims	1	- 3 =	0	x \$82.00	\$0.00
Multiple Dependent Claims (check if applicable) <input type="checkbox"/>					\$0.00
BASIC FEE					\$790.00
OTHER FEE (specify purpose)					\$0.00
TOTAL FILING FEE					\$790.00

- ☒ A check in the amount of \$790.00 to cover the filing fee is enclosed.
- ☒ The Commissioner is hereby authorized to charge and credit Deposit Account No. as described below. A duplicate copy of this sheet is enclosed.
- ☐ Charge the amount of as filing fee.
- ☒ Credit any overpayment.
- ☒ Charge any additional filing fees required under 37 C.F.R. 1.16 and 1.17.
- ☐ Charge the issue fee set in 37 C.F.R. 1.18 at the mailing of the Notice of Allowance, pursuant to 37 C.F.R. 1.311(b).

Dated: March 4, 1998

  
Signature

Frederick F. Calvetti, Reg. No. 28,557  
BELL, BOYD & LLOYD  
P.O. Box 65331  
Washington, DC 20035-5331

CC:

# DESCRIPTION FIELD OF THE INVENTION

A

The invention relates to the field of drying and the subject of the invention is more particularly compositions for removing the water which superficially wets solid surfaces, in particular electronic materials (printed or integrated circuits), precision mechanical components, glass substrates and military, aerospace, aeronautical or medical equipment.

## BACKGROUND OF THE INVENTION

A

The usual process for dewetting solid surfaces consists in immersing the wet substrate in an organic solution of an ionic or non-ionic surface-active agent. Until recently, the organic solvent commonly used was 1,1,2-trichloro-1,2,2-trifluoroethane (CFC 113) but its use has been banned because of its harmful effect on the stratospheric ozone layer.

The use of 1-chloro-1,1-difluoroethane (HCFC 141b), provided as substitute for CFC 113 in dewetting compositions, is already regulated and before long it will no longer be possible to use this compound.

To replace CFC 113 and HCFC 141b, the use has been envisaged of fluorinated hydrocarbons which, like 1,1,1,3,3-pentafluorobutane (365 mfc), 1,1,1,2,2,4,4-heptafluorobutane (347 mcf), (perfluorobutyl)ethylene ( $C_4F_9CH=CH_2$ ), 1H-perfluorohexane, n-perfluorohexane (PF 5060) or 1,1,1,2,3,4,4,5,5,5-decafluoropentane (43-10 mee), and perfluoro(methylmorpholine) (PF 5052), have no effect on the stratospheric ozone layer (zero

ODP), do not exhibit a flash point and, as is shown in the following table, possess physical characteristics which are similar to those of CFC 113 and HCFC 141b.

Solvent	Boiling point (°C)	Surface tension at 25°C (mN/m)	Relative density at 20°C
CFC 113	47.6	17.7	1.57
HCFC 141b	32	19.5	1.23
365 mfc	40	16.2	1.27
347 mcf	33.3	14.2	1.42
C <sub>4</sub> F <sub>9</sub> CH=CH <sub>2</sub>	59	13.6	1.46
C <sub>6</sub> F <sub>13</sub> H	71	13	1.70
PF 5060	56	12	1.68
PF 5052	50	13	1.70
43-10 mee	54	14.1	1.58

5                    However, the replacement of CFC 113 or of  
 HCFC 141b by a fluorinated hydrocarbon such as those  
 mentioned above is unsatisfactory because ionic-  
 surface-active agents, which are most often used in  
 dewetting compositions, are insoluble therein. Non-  
 10 ionic surface-active agents are soluble in these  
 fluorinated hydrocarbons but their dewetting  
 effectiveness is often unsatisfactory.

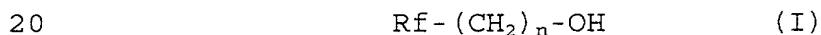
To solve this problem in the case of 365 mfc,  
 provision has been made, in the publication of Patent  
 15 JP 05-168805, for the addition of a cosolvent chosen

from alcohols, ketones, alkanes and ethers. However,  
when the cosolvent is an alcohol comprising 1 to 3  
carbon atoms, or a ketone, it is rapidly removed with  
the water, causing the rapid precipitation of the  
5 surface-active agent. As regards alkanes and ethers,  
they exhibit a flash point, which presents a safety  
problem for dewetting plants.

### DESCRIPTION OF THE INVENTION

A It has now been found that the use of  
tridecafluorooctanol ( $C_6F_{13}CH_2CH_2OH$ ) and more generally  
10 of a water-immiscible polyfluorinated alcohol makes it  
possible to dissolve the majority of dewetting surface-  
active agents in fluorinated hydrocarbons without a  
harmful effect on the ozone layer.

3 The subject of the present invention is thus,  
15 <sup>9</sup>~~as~~ composition useful for the dewetting of solid  
surfaces, a solution of at least one surface-active  
agent in a mixture of at least one fluorinated solvent  
and of at least one polyfluorinated alcohol of general  
formula:



in which n is equal to 1 or 2 and  $R_f$  represents a  
linear or branched perfluoroalkyl radical containing  
from 4 to 8 carbon atoms. Such a composition does not  
exhibit a flash point under the standard determination  
25 conditions (ASTM standard D 3828).

In accordance with the present invention, the  
fluorinated solvent, which is liquid at room  
temperature, must not contain halogen atoms other than

fluorine but it can contain heteroatoms, such as oxygen or nitrogen. Use is advantageously made of a fluorinated solvent with a normal boiling point of between 20 and 100°C, preferably between 30 and 75°C.

- 5 Saturated or unsaturated fluorinated hydrocarbons containing from 3 to 6 carbon atoms, such as, for example, the compounds 365 mfc, 347 mcf,  $C_4F_9CH=CH_2$ , PF 5060 and 43-10 mee mentioned above, as well as 1H-perfluorohexane ( $C_6F_{13}H$ ) and 1,1,1,2,2,3,3,4,4-  
10 nonafluorohexane, are particularly well suited.

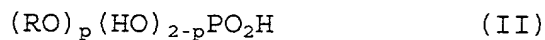
The polyfluorinated alcohols of formula (I) are known products. Among these, it is preferable to use those in which n is equal to 2. A more particularly preferred polyfluorinated alcohol is

- 15 tridecafluorooctanol ( $C_6F_{13}CH_2CH_2OH$  hereinafter TDFO).

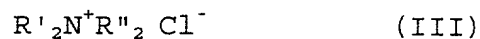
The amount of polyfluorinated alcohol necessary to completely dissolve the surface-active agent in the dewetting composition according to the invention can vary within wide limits, depending on the  
20 nature of the fluorinated solvent and of the surface-active agent employed and according to the desired concentration of surface-active agent. For a normal concentration of surface-active agent (0.01 to 0.5% by weight), a content of polyfluorinated alcohol ranging  
25 up to 30% by weight is generally sufficient to produce complete dissolution of the surface-active agent; in certain cases, even a very low proportion of polyfluorinated alcohol (0.1%) proves to be sufficient.

Consequently, in the dewetting composition according to the invention, the content of polyfluorinated alcohol can range from 0.1 to 30% by weight but it is advantageously between 0.5 and 5%.

5 In the composition according to the invention, the surface-active agent can be any surface-active agent commonly used in dewetting compositions. Thus, non-ionic surface-active agents, such as fatty esters (for example, caprylamine caprylate and  
10 caprylamine, dodecylamine or stearylamine caproate), or fluorinated non-ionic surface-active agents, such as, for example, adducts of ethylene oxide with a polyfluorinated alcohol of formula (I), esters of polyfluorocarboxylic acids,  
15 (polyfluoroalkyl)aminoalcohols, polyfluoroalkyl sulphides or polysulphides, or polyfluoroalkanecarbonamides or -sulphonamides, can be used. It is also possible to use anionic surface-active agents (for example a polyfluorosulphonic acid) but it  
20 is preferable to use cationic surface-active agents and more particularly those obtained by reaction of a mono- or dialkyl phosphoric acid of general formula:



in which p is a number ranging from 1 to 2 and R  
25 denotes a linear or branched alkyl radical containing from 1 to 18 carbon atoms, with a quaternary ammonium chloride of general formula:





in which R' and R", which are identical or different, each represent a hydrogen atom or an alkyl or hydroxyalkyl radical containing 1 to 4 carbon atoms, and a fluorinated amine of general formula:



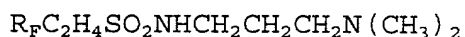
in which  $R_F$  represents a linear perfluoroalkyl radical containing from 2 to 20 carbon atoms, X represents a divalent bridge and the symbols  $R^1$  and  $R^2$ , which are identical or different, each represent a hydrogen atom  
 10 or an alkyl or hydroxyalkyl radical containing 1 to 4 carbon atoms.

Such cationic surface-active agents and their preparation are described in Patents FR 2,522,007 and 2,691,473, the contents of which are incorporated here  
 15 by reference. As in the abovementioned patents, it is preferable to use:

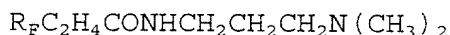
- acids (II) in which R is a butyl, hexyl, 2-ethylhexyl, octyl or tridecyl radical and more particularly mixtures of monoalkyl phosphoric acid and  
 20 of dialkyl phosphoric acid in which the proportion by weight of the two acids is between approximately 60/40 and 40/60,

- quaternary ammonium chlorides (III) in which R' is a dodecyl or octadecyl radical and R" is a  
 25 methyl radical or the commercial products mostly containing these chlorides,

- fluorinated amines of formula:



or



As in the compositions of the prior art, the content of surface-active agent(s) in the dewetting composition according to the invention can vary within wide limits. This content is generally low (from 0.01 to 0.5% by weight, preferably 0.04 to 0.2%) in ready-for-use dewetting compositions but it can reach up to 30% by weight in concentrated compositions which only have to be diluted for the dewetting operation.

The solid surfaces from which water can be removed by means of a composition according to the invention can be highly varied, provided, however, that their substance (glass, metal, refractory material, plastic, and the like) is insoluble in and cannot be attacked by the fluorinated solvent(s) of the composition according to the invention.

#### EXAMPLES

The following examples illustrate the invention without limiting it. The cationic surface-active agents SA1 and SA2 were prepared from the following commercial products:

- butyl phosphoric acid  $(C_4H_9O)_{1.5}(OH)_{0.5}PO_2H$

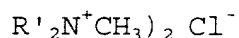
exhibiting the following acid values:

strong acidity: 0.566 equivalent per 100 g

weak acidity: 0.276 equivalent per 100 g

which corresponds to a mixture containing approximately 40% of monobutyl phosphoric acid and 60% of dibutyl phosphoric acid.

- Noramium M2C: mixture of different homologues of formula:



in which the distribution of the fatty chains (R') is

5	as follows:	C <sub>8</sub>	3%
		C <sub>10</sub>	6%
		C <sub>12</sub>	56%
		C <sub>14</sub>	18%
		C <sub>16</sub>	10%
10		C <sub>18</sub> , saturated	2%
		C <sub>18</sub> , unsaturated	5%

This commercial product contains 75% of active material and contains 0.161 chloride equivalent per 100 g.

#### 15 Preparation of the surface-active agent SA1

2.69 g of butyl phosphoric acid, 3.91 g (i.e. 7.6 meq.) of the fluorinated amine C<sub>6</sub>F<sub>13</sub>C<sub>2</sub>H<sub>4</sub>SO<sub>2</sub>NHCH<sub>2</sub>CH<sub>2</sub>CH<sub>2</sub>N(CH<sub>3</sub>)<sub>2</sub>, 3 g of a 10% methanolic sodium hydroxide solution (i.e. 7.6 meq. NaOH) and 8.32 g of Noramium  
 20 M2C are added successively and with stirring to 150 g of HCFC 141b. This final addition causes the immediate formation of a sodium chloride precipitate which is removed by filtration (weight of NaCl collected: 0.4 g).

25 After removing the sodium chloride precipitate, the filtrate is then evaporated to dryness at 110°C in an oven. 14.8 g of surface-active agent SA1 are thus obtained.

Preparation of the surface-active agent SA2

The preparation is carried out as above but replacing the 150 g of HCFC 141b with 300 g of TDFO and dispensing with the final stage of evaporation to  
5 dryness. A solution containing approximately 5% of surface-active agent SA2 in TDFO is thus obtained.

EXAMPLE 1

A dewetting solution is prepared by dissolving 100 mg of surface-active agent SA1 in a  
10 mixture of 95 g of HFC 365 mfc and 5 g of TDFO and then this solution is introduced into a beaker placed in a small Branson 2200 ultrasonic vessel.

A 20 x 50 mm stainless steel grid, wetted beforehand by immersion in water, is then immersed in  
15 the dewetting solution and maintained under ultrasonic agitation for one minute.

After having been withdrawn from the dewetting solution, the grid is immersed in absolute alcohol and the quantitative determination of water by  
20 the Karl Fischer method indicates that 94% of the water has been removed.

The same result is obtained if the fluorinated alcohol TDFO is replaced with the same amount of a technical mixture of alcohols of formula  
25  $R_f-CH_2CH_2-OH$ , the distribution of the  $R_f$  radicals being centred about  $C_6$ .

If the fluorinated alcohol TDFO is replaced with the same amount of n-pentanol or of n-hexanol, the

degree of removal of the water is only 60% and 72% respectively.

#### EXAMPLE 2

A dewetting solution is prepared by mixing  
5 1 g of the solution containing 5% of surface-active agent SA2 and 99 g of HFC 365 mfc. A dewetting solution containing 500 ppm of surface-active agent SA2 is thus obtained, which solution is used as in Example 1. The degree of removal of the water is 95%.

10 Substantially the same result is obtained by using a dewetting solution containing 0.1% of surface-active agent SA2 in a mixture of 99 g of HFC 365 mfc and 1 g of TDFO.

#### EXAMPLES 3 to 11

15 The procedure is as in Example 2, but replacing the solvent HFC 365 mfc with other fluorinated solvents. The operating conditions and the results are combined in the following table.

Example	Solvent	(%)	% of TDFO	SA2 (ppm)	Water removed (%)
3	347 mcf	98	2	500	93
4	$C_4F_9CH=CH_2$	95	5	1000	92
5	$C_4F_9CH=CH_2$	99	1	500	95
6	$C_4F_9CH_2CH_3$	99	1	500	91
7	$C_4F_9CH_2CH_3$	98	2	500	92
8	$C_6F_{13}H$	98	2	500	91
9	PF 5060	99	1	500	92
10	PF 5052	99	1	500	94
11	43-10 mee	98	2	500	94

**EXAMPLE 12**

The procedure is as in Example 1, but replacing the fluorinated alcohol TDFO with

5 pentafluoropropanol ( $CF_3CF_2CH_2OH$ , hereinafter PFP) and using a dewetting solution obtained by dissolving 100 mg of surface-active agent SA1 in a mixture of 80 g of HFC 365 mfc and 20 g of PFP. The degree of removal of the water is 95%.

10

**EXAMPLE 13**

The procedure is as in Example 1, but using a dewetting solution obtained by dissolving 100 mg of N,N'-dioleoyl-N-oleylpropylenediamine (hereinafter surfactant SA3) in a mixture of 90 g of HFC 365 mfc and

10 g of TDFO. The degree of removal of the water is 91%.

If the TDFO is replaced with the same amount (10 g) of PFP, the degree of removal of the water is 93%.

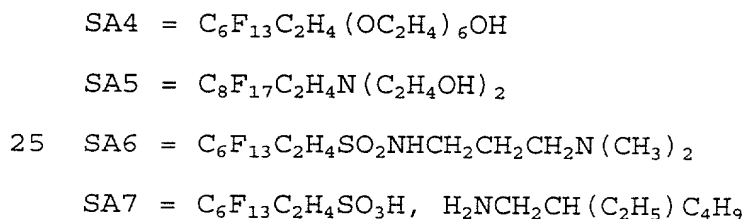
#### EXAMPLE 14

The procedure is as in Example 1, but using a dewetting solution obtained by dissolving 100 mg of the adduct of 6 mol of ethylene oxide with one mole of TDFO in a mixture of 99 g of HFC 365 mfc and 1 g of TDFO. The degree of removal of the water is 90%.

If the mixture of 365 mfc and of TDFO is replaced with a mixture of 90 g of 365 mfc and 10 g of PFP, the degree of removal of the water is also 90%.

#### EXAMPLES 15 to 18

The procedure is as in Example 1, but replacing the fluorinated alcohol TDFO with PFP and using a dewetting solution obtained by dissolving, in a mixture of 80 g of HFC 365 mfc and 20 g of fluorinated alcohol PFP, 100 mg of one of the following surface-active agents:



The results obtained are combined in the following table.

Example	Surface-active agent	Water removed (%)
15	SA4	93
16	SA5	93
17	SA6	93
18	SA7	95

**EXAMPLE 19**

22 litres of the dewetting solution of Example 2 are charged to the dewetting and settling tanks of a drying machine with a capacity of 33 litres and 11 litres of pure HFC 365 mfc are charged to the rinsing vessel.

A wet stainless steel grid, resulting from a prior washing and rinsing treatment in aqueous medium, is immersed in the dewetting tank for 3 minutes and then rinsed for 3 minutes in the pure HFC 365 mfc at boiling point.

The drying performance was evaluated in the following way:

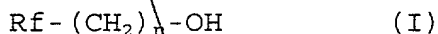
The grid is subsequently immersed in 100 g of absolute ethanol, the water content of which was determined beforehand by the Karl Fischer method. A new quantitative determination carried out after immersion of the grid revealed no increase in the water content, which means that the composition according to the invention makes it possible to obtain virtually complete removal of the water.



Although the invention has been described in conjunction with specific embodiments, it is evident that many alternatives and variations will be apparent to those skilled in the art in light of the foregoing description. Accordingly, the invention is intended to embrace all of the alternatives and variations that fall within the spirit and scope of the appended claims. The above references are hereby incorporated by reference.

CLAIMS

Sub A1  
 1. Dewetting composition, characterized in that it is composed of a solution of at least one surface-active agent in a mixture of at least one  
 5 fluorinated solvent and of at least one polyfluorinated alcohol of general formula:



in which n is equal to 1 or 2 and Rf represents a linear or branched perfluoroalkyl radical containing  
 10 from 4 to 8 carbon atoms.

2. Composition according to Claim 1, containing at least one alcohol of formula (I) in which n is equal to 2.

Sub A2  
 3. Composition according to Claim 1, <sup>wherein</sup> in which the alcohol of formula (I) is  
 15 tridecafluorooctanol ( $\text{C}_6\text{F}_{13}\text{CH}_2\text{CH}_2\text{OH}$ ).

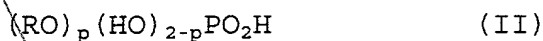
Sub A2  
 4. Composition according to one of Claims 1 to 3, in which the fluorinated solvent has a normal boiling point of between 20 and 100°C, preferably  
 20 between 30 and 75°C.

Sub A3  
 5. Composition according to Claim 4, <sup>wherein</sup> in which the fluorinated solvent is a saturated or unsaturated fluorinated hydrocarbon containing from 3 to 6 carbon atoms.

Sub A3  
 25 6. Composition according to Claim 4 or 5, in which the fluorinated hydrocarbon is chosen from 1,1,1,3,3-pentafluorobutane, 1,1,1,2,2,4,4-heptafluorobutane, 1,1,1,2,3,4,4,5,5,5-

decafluoropentane, 1,1,1,2,2,3,3,4,4-nonafluorohexane, 1H-perfluorohexane, n-perfluorohexane, (perfluorobutyl)ethylene and perfluoro(methylmorpholine).

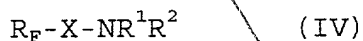
- 5                    7. Composition according to one of Claims 1 to 6, in which the surface-active agent is a cationic surface-active agent obtained by reaction of a mono- or dialkyl phosphoric acid of general formula:



- 10 in which p is a number ranging from 1 to 2 and R denotes a linear or branched alkyl radical containing from 1 to 18 carbon atoms, with a quaternary ammonium chloride of general formula:



- 15 in which R' and R'', which are identical or different, each represent a hydrogen atom or an alkyl or hydroxyalkyl radical containing 1 to 4 carbon atoms, and a fluorinated amine of general formula:



- 20 in which  $R_F$  represents a linear perfluoroalkyl radical containing from 2 to 20 carbon atoms, X represents a divalent bridge and the symbols  $R^1$  and  $R^2$ , which are identical or different, each represent a hydrogen atom or an alkyl or hydroxyalkyl radical containing 1 to 25 4 carbon atoms.

8. Composition according to Claim 7, <sup>wherein</sup> ~~in~~ which R is a butyl, hexyl, 2-ethylhexyl, octyl or tridecyl radical, R' is a dodecyl or octadecyl radical,

sub  
D17 R" is a methyl radical, X is a  $-\text{CH}_2\text{CH}_2\text{SO}_2\text{NHCH}_2\text{CH}_2\text{CH}_2-$  or  $-\text{C}_2\text{H}_4\text{CONHCH}_2\text{CH}_2\text{CH}_2-$  bridge and  $\text{R}^1$  and  $\text{R}^2$  are methyl radicals.

9. Composition according to one of Claims 1 to 8, in which the content of polyfluorinated alcohol(s) is between 0.1 and 30% by weight, preferably between 0.5 and 5%.

sub  
D17 10. Composition according to one of Claims 1 to 9, in which the content of surface-active agent(s) is between 0.01 and 0.5% by weight, preferably between 0.04 and 0.2%.

11. Composition according to one of Claims 1 to 9, in the form of a concentrate containing up to 30% by weight of surface-active agent(s).

15 12. Use of a composition according to one of Claims 1 to 10 for the dewetting of solid surfaces.

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A5

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PATENT APPLICATION	
COUNTRY:	FRANCE
Filed on:	4 March 1997
No.:	97.02550
File No.:	AM 1163

TEXT FOR FOREIGN FILING

( ABSTRACT

oooOooo

COMPOSITIONS FOR DRYING SOLID SURFACES

oooOooo

Company called: ELF ATOCHEM S.A.  
4/8 Cours Michelet  
La Défense 10  
92800 PUTEAUX

oooOooo

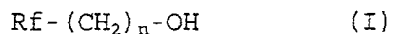
Agent: Jean LEBOULENGER

oooOooo

Inventor: Pascal MICHAUD

oooOooo

A drying composition according to the invention is composed of a solution of a surface-active agent in a mixture of a fluorinated hydrocarbon and of a polyfluorinated alcohol of formula:



in which n is equal to 1 or 2 and Rf represents a linear perfluoroalkyl radical containing from 2 to 8 carbon atoms.



PATENT

Docket No. 1798-7267

COMBINED DECLARATION AND POWER OF ATTORNEY FOR  
ORIGINAL, DESIGN, NATIONAL STAGE OF PCT, SUPPLEMENTAL,  
DIVISIONAL, CONTINUATION OR CONTINUATION-IN-PART APPLICATION

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name,

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled:

COMPOSITIONS FOR DRYING SOLID SURFACES

the specification of which

- a. ☒ is attached hereto
- b. ☐ was filed on \_\_\_\_\_ as application Serial No. \_\_\_\_\_ and  
was amended on \_\_\_\_\_. (if applicable).

PCT FILED APPLICATION ENTERING NATIONAL STAGE

- c. ☐ was described and claimed in International Application No. \_\_\_\_\_  
filed on \_\_\_\_\_ and as amended on \_\_\_\_\_. (if any).

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is material to the examination of this application in accordance with Title 37, Code of Federal Regulations, § 1.56(a).

☒ I hereby claim foreign priority benefits under Title 35, United States Code § 119 of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application on which priority is claimed:

☒ The attached 35 U.S.C. § 119 claim for priority for the U.S. application(s) listed below forms a part of this declaration.

<u>Country</u>	<u>Application Number</u>	<u>Date of filing (day, month, yr)</u>	<u>Date of issue (day, month, yr)</u>	<u>Priority Claimed</u>
France	97.02550	04 March 1997		<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO
				<input type="checkbox"/> YES <input type="checkbox"/> NO
				<input type="checkbox"/> YES <input type="checkbox"/> NO

ADDITIONAL STATEMENTS FOR  
DIVISIONAL, CONTINUATION OR CONTINUATION-IN-PART

I hereby claim the benefit under Title 35, United States Code § 120 of any United States application(s) listed below.

Application Serial No.	Filing Date	Status (patented, pending, abandoned)
Application Serial No.	Filing Date	Status (patented, pending, abandoned)

[ ] In this continuation-in-part application, insofar as the subject matter of any of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35, United States Code, § 112, I acknowledge the duty to disclose material information as defined in Title 37, Code of Federal Regulations, § 1.56(a) which occurred between the filing date of the prior application and the national or PCT international filing date of this application.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or Imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

I hereby appoint the following attorneys to prosecute this application and to transact all business in the Patent and Trademark Office connected therewith: Frederick F. Calveti (28,557), BELL, BOYD & LLOYD, P.O. Box 65331, Washington, DC 20035-5331, Telephone: (202) 466-6300, Telefax: (202) 463-0678. Address all correspondence to BELL, BOYD & LLOYD, P.O. Box 65331, Washington, D.C. 20035-5331.

The undersigned hereby authorizes the U.S. attorneys named herein to accept and follow instructions from the undersigned's assignee, if any, and/or, if the undersigned is not a resident of the United States, the undersigned's domestic attorney, patent attorney or patent agent, as to any action to be taken in the Patent and Trademark Office regarding this application without direct communication between the U.S. attorneys and the undersigned. In the event of a change in the person(s) from whom instructions may be taken, the U.S. attorneys named herein will be so notified by the undersigned.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under §1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

I hereby specify the following as the correspondence address to which all communications about this application are to be directed:

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SEND CORRESPONDENCE TO:

BELL, BOYD & LLOYD  
P.O. BOX 65331  
Washington, DC 20035-5331.

DIRECT TELEPHONE CALLS TO: Frederick F. Calvetti, Tel: 202-466-6300

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Full name of sole or first inventor Pascal MICHAUD

Inventor's signature\* *Pascal Michaud*

March, 3, 1998  
date

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Full name of second joint inventor, if any \_\_\_\_\_

Inventor's signature\* \_\_\_\_\_

date

Residence \_\_\_\_\_

Citizenship \_\_\_\_\_

Post Office Address \_\_\_\_\_